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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,606	02/05/2004	Joseph E. Geusic	303.390US4	5065
21186	7590	02/09/2005	EXAMINER	
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			MALDONADO, JULIO J	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/772,606

Applicant(s)

GEUSIC ET AL.

Examiner

Julio J. Maldonado

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2004.  
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.  
4a) Of the above claim(s) 16-33 and 41-47 is/are withdrawn from consideration.  
5) ☒ Claim(s) 34-40 is/are allowed.  
6) ☒ Claim(s) 1-4 and 7-14 is/are rejected.  
7) ☒ Claim(s) 5,6 and 15 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 20040205 20041126  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election of claims 1-15 and 34-40 in the reply filed on 11/26/2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 7, 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Prince (U.S. 5,431,775).

Prince (Figs.1A-1J) teaches a semiconductor device including a semiconductor substrate (5) having a first surface (10), a second surface (0) opposite the first surface (10), and a hole (60) extending through the semiconductor substrate (5) and connecting the first surface (10) and the second surface (20); a first functional circuit on the first surface of the semiconductor substrate (5) and a second functional circuit on the second surface of the semiconductor substrate (5) (column 2, lines 39 – 56); an optical fiber (70, 80) in the hole (60), the optical fiber (70, 80) having a cladding layer (70) and a core (80); the optical fiber (70, 80) also having a first end and a second end; an optical transmitter located at the first end of the optical fiber (70, 80); and an optical receiver

located at the second end of the optical fiber (70, 80), wherein the optical transmitter and the optical receiver are configured to transmit optical signals through the semiconductor substrate (5) between the first functional circuit and a second functional circuit; wherein the optical receiver is configured to transmit the optical signals between the first and second functional circuits; wherein the cladding layer surrounds the core, and a first index of refraction of the core is greater than a second index of refraction of the cladding layer; and wherein the cladding layer includes silicon oxide (column 2, line 7 – column 4, line 59).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prince (U.S. 5,431,775) as applied to claims 1-4, 7, 9 and 10 above, and further in view of Brück et al. (U.S. 5,483,614).

Prince substantially teaches wherein the core has a refractive index of 1.56 and wherein the cladding layer has a refractive index of 1.46 (Prince, column 4, lines 32 – 36), but fails to disclose wherein the cladding layer includes a nitride material.

However, Brück et al. teach an optic fiber having a silicon nitride core and an oxidic silicon nitride cladding (column 5, line 35 – column 6, line 4). Furthermore, Brück et al.

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teach wherein the material used for the cladding layer has to have a refractive index lower than the refraction index of the core. (column 3, line 64 – column 4, line 4).

Since oxidic silicon nitride has refractive index than the refractive index in the core taught by Prince, it would have been within the scope of one of ordinary skill in the art to combine the teachings of Prince and Brück et al. to enable using oxidic silicon nitride as cladding layer in Prince according to the teachings of Brück et al. because one of ordinary skill in the art at the time the invention was made would have been motivated to look for alternative suitable materials used in Prince and art recognized suitability for an intended purpose has been recognized to be motivation to combine. MPEP 2144.07.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prince (U.S. 5,431,775) as applied to claims 1-4, 7, 9 and 10 above, and further in view of Beales et al. (U.S. 4,452,508).

Prince teaches using silicon oxide as the cladding layer but fail to disclose wherein the cladding layer includes  $\text{Al}_2\text{O}_3$ . However, Beales et al. teach a fiber optic wherein the cladding layer includes silicon oxide with  $\text{Al}_2\text{O}_3$ , for the further advantage of improving the bandwidth of the signal (column 6, lines 49 – 68). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Prince and Beales et al. to enable including  $\text{Al}_2\text{O}_3$  in the cladding layer Prince as taught by Beales et al.

7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prince (U.S. 5,431,775) as applied to claims 1-4, 7, 9 and 10 above, and further in view of the following comments.

Prince substantially teaches wherein the optical fiber is configured to transmit light having a wavelength but fails to disclose wherein the hole includes a diameter of 0.59 times the wavelength of the light. Notwithstanding, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose these particular dimensions because applicant has not disclosed that the dimensions are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical, and it appears prima facie that the process would possess utility using another dimension. Indeed, it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prince (U.S. 5,431,775) as applied to claims 1-4, 7, 9 and 10 above, and further in view of Kubota (U.S. 6,087,899).

Prince teaches using an optical transmitter and an optical receiver but fails to disclose wherein said optical transmitter includes gallium arsenide. However, Kubota teaches that conventional transmitters are made of materials that include gallium arsenide (column 1, lines 16 – 20). It would have been within the scope of one of ordinary skill in the art to combine the teachings of Prince and Kubota to enable the optical transmitter of Prince as taught by Kubota because one of ordinary skill in the art at the time the invention was made would have been motivated to look to alternative suitable optical transmitters for Prince and art recognized suitability for an intended purpose has been recognized to be motivation to combine. MPEP 2144.07.

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prince (U.S. 5,431,775) as applied to claims 1-4, 7, 9 and 10 above, and further in view of Lytel et al. (U.S. 5,039,189).

Prince teaches using an optical transmitter and an optical receiver but fails to disclose wherein said optical receiver includes a silicon photodiode detector. However, Lytel et al. teach wherein conventional optical receiver includes silicon photodiode detectors (column 1, lines 55 – column 2, lines 2). It would have been within the scope of one of ordinary skill in the art to combine the teachings of Prince and Lytel et al. to enable using an optical receiver in Prince as taught by Lytel et al. because one of ordinary skill in the art at the time the invention was made would have been motivated to look to alternative suitable receiver in Prince and art recognized suitability for an intended purpose has been recognized to be motivation to combine. MPEP 2144.07.

***Allowable Subject Matter***

10. Claims 5, 6, and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
11. Claims 34-40 are allowed.
12. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record fails to teach a core hole running along the center of the optical fiber; a reflecting mirror lining the hole; and an optical fiber in a substrate between a memory device on the first surface and a processor on the second surface, wherein said device has an optical transmitter and an optical receiver configured to transmit signals between the memory device and the processor.

***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Julio J. Maldonado whose telephone number is (571) 272-1864. The examiner can normally be reached on Monday through Friday.
14. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (571) 272-1855. The fax number for this group is 703-872-9306 for before final submissions, 703-872-9306 for after final submissions and the customer service number for group 2800 is (703) 306-3329. Updates can be found at <http://www.uspto.gov/web/info/2800.htm>.

Julio J. Maldonado  
Patent Examiner

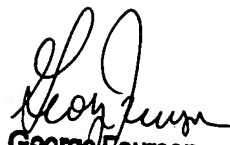


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Julio J. Maldonado  
February 4, 2005

  
George Fourson  
Primary Examiner